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U1S S1432**

(56) Documents Cited

**EP 0317047 A2**

**US 5178469 A**

**US 4119267 A**

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INT CL<sup>6</sup> A47G 29/06 , B31B 1/00 19/00 19/84 39/00  
39/84 , B65D 30/02 30/08 65/38 65/40 88/16 , B65F  
1/00 1/06 1/14**

**Online: WPI**

(54) A waste bag

(57) A waste bag 10 is formed from a sheet of laminate comprising an outer layer of fluid-proof plastics material (14, Figure 1) and an inner layer of liquid absorbent plastics material (16, Figure 1) with the material of at least one seam 20 turned back on itself and regions of the fluid-proof material along that seam ultrasonically welded together. The bag may be formed by folding a sheet of the laminate so that the fluid-proof plastics material is on the inside, ultrasonically welding the seam and turning the bag inside out so that the liquid absorbent material is on the inside. The liquid absorbent material may be non-woven filamentary polypropylene. Also claimed is a waste bag having an adhesive layer (Figures 3-8) extending either at least half way around the inside of the mouth of the bag or around the outside of the mouth for closure.

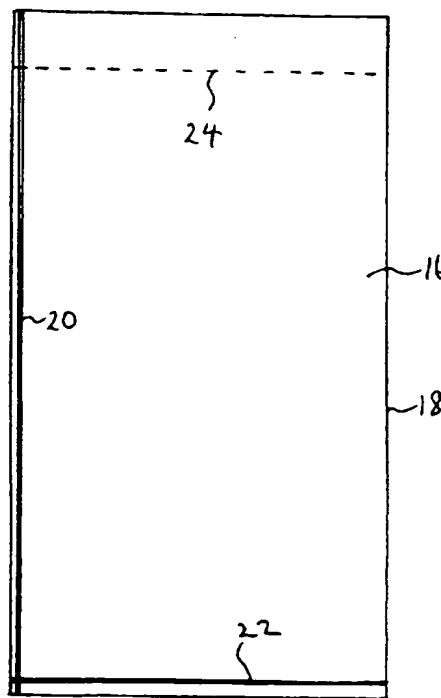


Fig. 2

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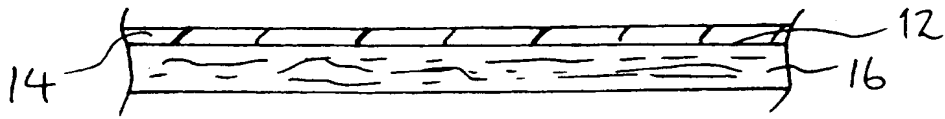


Fig. 1

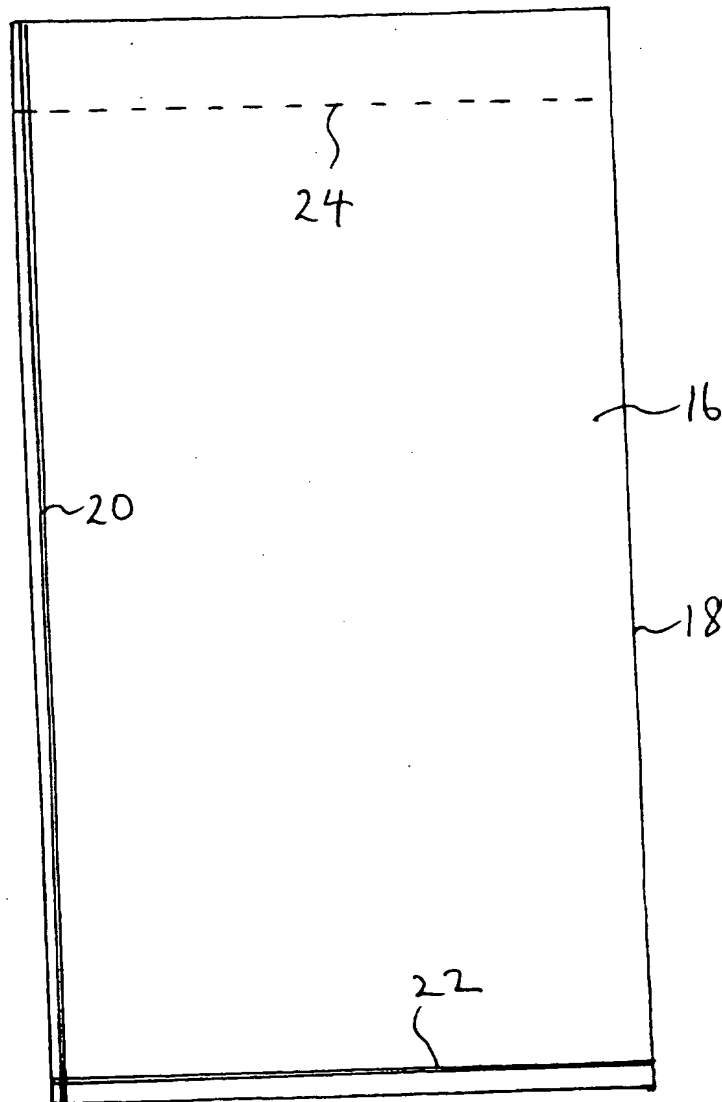


Fig. 2

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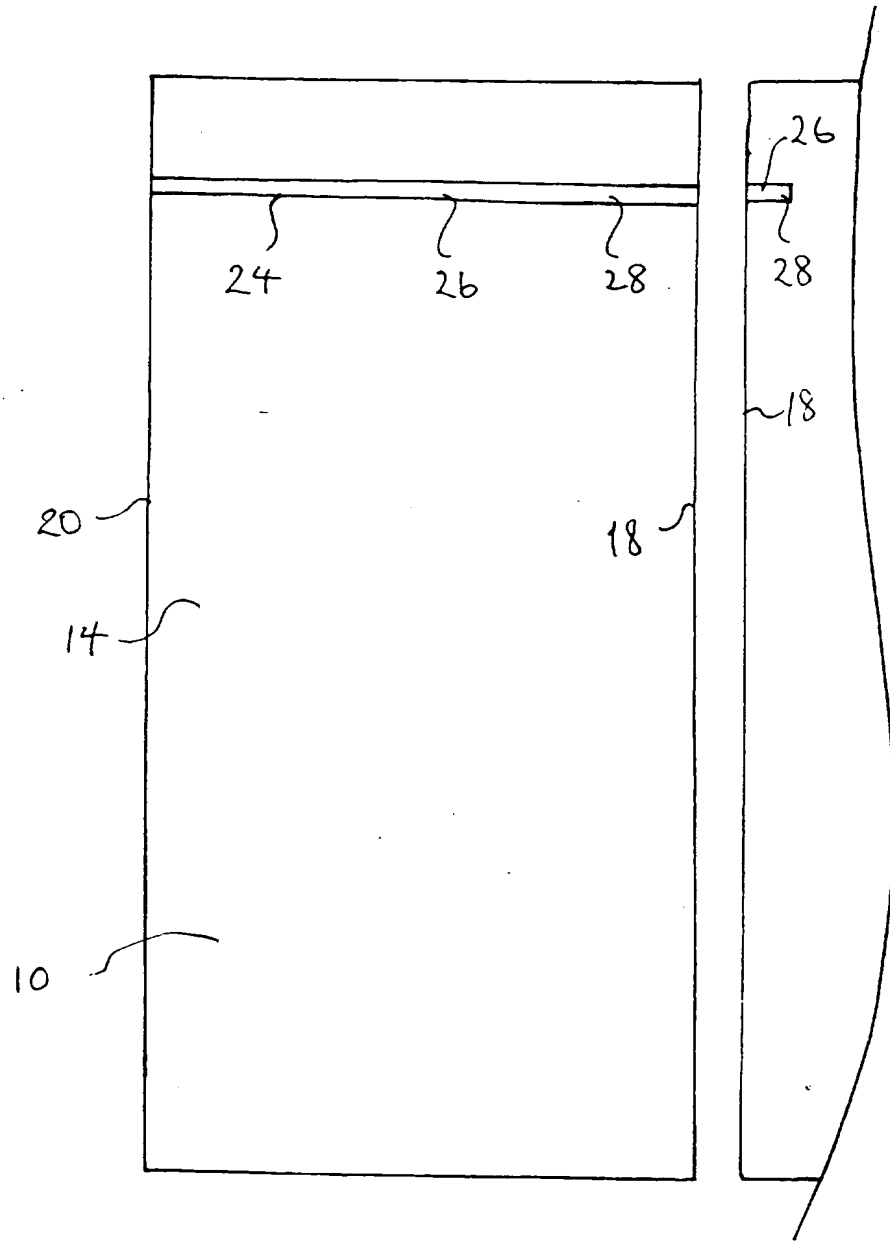


Fig. 3a

Fig. 3b

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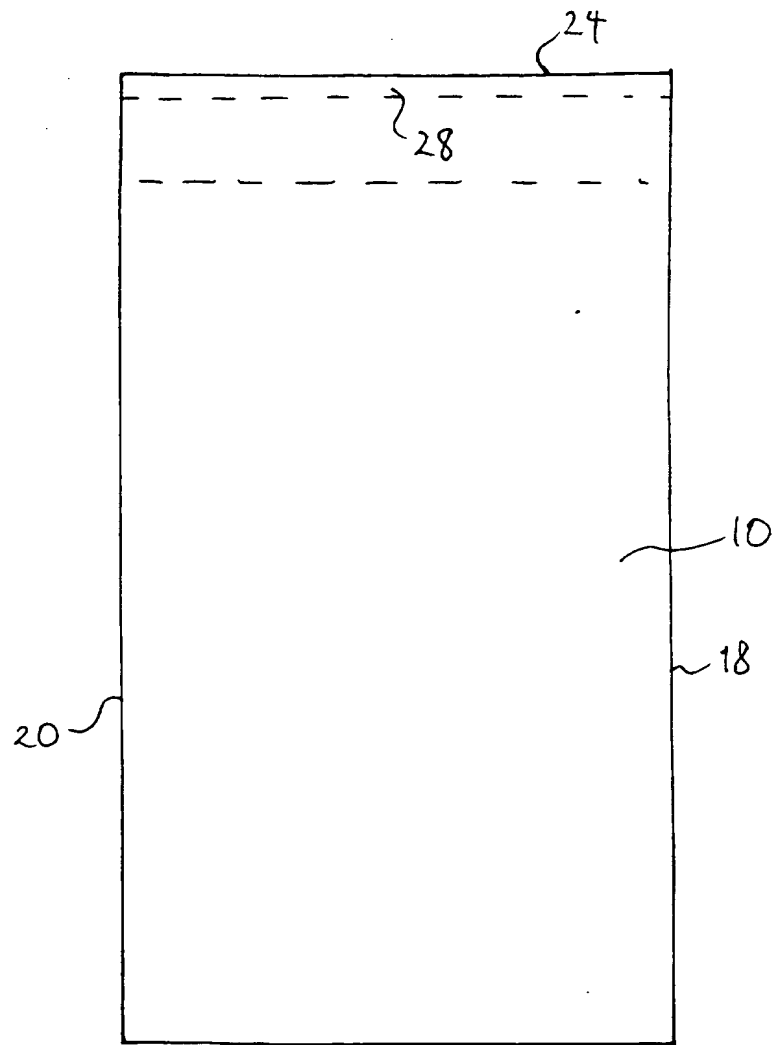


Fig. 4

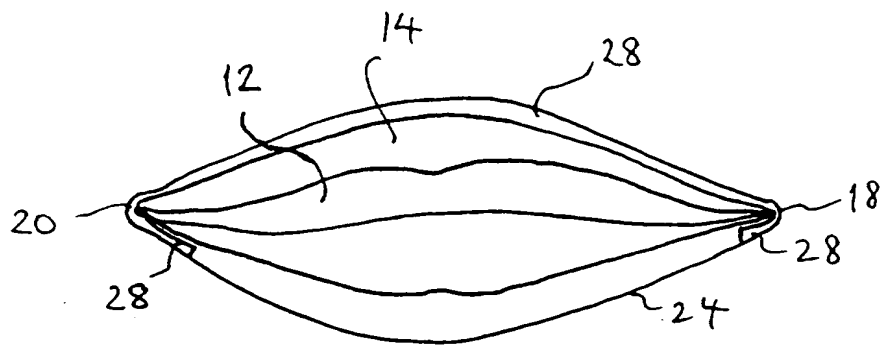


Fig. 5

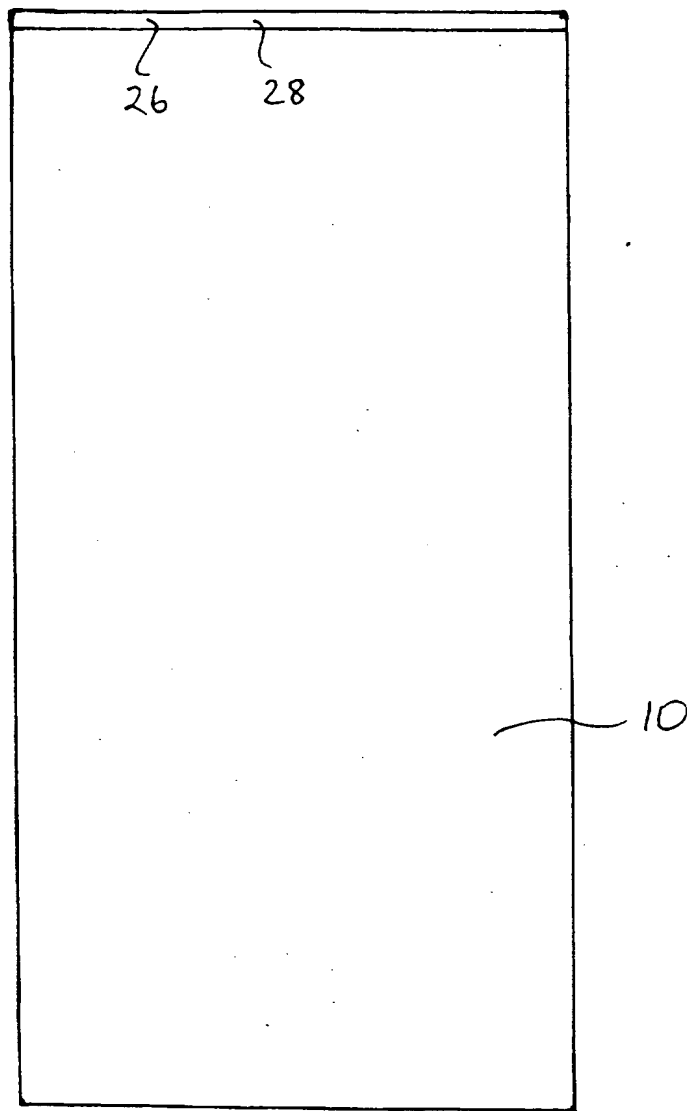


Fig. 6

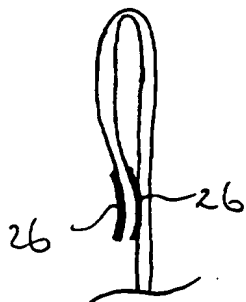


Fig. 7

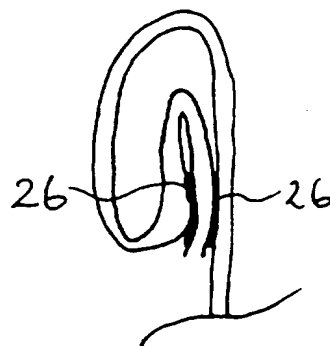


Fig. 8

## A waste bag

The present invention relates to a waste bag, which has a liquid-absorbent material on its inside. Such a bag is especially useful, for example in disposing of medical waste which may include body fluids.

One previously proposed such waste bag is described in EP-B-0 317 047. The waste bag described in that prior specification has an internal lining of a liquid-absorbent material which terminates inwardly of the mouth of the bag to enable that region to be gathered and tied.

One disadvantage in this construction of bag is the difficulty experienced in its manufacture, especially if the lining is made separately from the outer material of the bag.

A first aspect of the present invention seeks to provide a remedy.

Accordingly, the first aspect of the present invention is directly to a waste bag made from a sheet of plastics laminate comprising a layer of generally fluid-proof plastics material and a layer of liquid-absorbent plastics material, in which the liquid-absorbent material is on the inside of the bag, and the laminate is turned back on itself along at least one seam of the bag, and regions of the generally fluid-proof plastics material that are in contact with one another along that seam are sealed together ultrasonically.

This aspect of the present invention also extends to a method of making such a bag, comprising the steps of (a) folding a sheet of plastics laminate comprising a layer of generally fluid-proof plastics material and a layer of liquid-absorbent plastics material back on itself so that the liquid-absorbent plastics material is on the outside, (b) ultrasonically welding the generally fluid-proof plastics material from the two sides of the sheet thus brought together along at least one seam thereof; and (c) turning the bag thus created inside out to bring the generally fluid-proof plastics material on to the outside with the liquid-absorbent plastics material on the inside.

The first aspect of the present invention also extends to a method of making such a bag comprising the steps of (a) ultrasonically sealing a tubular sheet of a plastics laminate comprising a layer of a generally fluid-proof plastics material and a layer of liquid-absorbent plastics material, with the latter on the outside, to create a seam along one end thereof by sealing together regions of the generally fluid-proof plastics material that are in contact with one another along that seam; and (b) turning the bag thus created inside out to bring the generally fluid-proof plastics material on to the outside with the liquid-absorbent plastics material on the inside.

A further problem encountered with the waste bag described in EP-B-0 317 047 is that even when the mouth of the bag is carefully gathered and tied, it does not form an adequate seal against the escape of fluids from within the

bag.

A second aspect of the present invention seeks to provide a remedy to this problem.

Accordingly, the second aspect of the present invention is directed to a waste bag having an adhesive layer which extends around at least half of the inside of the mouth of the bag, to enable the mouth to be sealed readily after waste matter has been inserted in the bag.

Such a construction is particularly valuable if combined with a waste bag which is made from a sheet of plastics laminate comprising a layer of generally fluid-proof plastics material and a layer of liquid-absorbent plastics material, in which the liquid-absorbent plastics material is on the inside of the bag and the laminate is turned back on itself around the mouth of the bag, the adhesive layer therefore being applied to the generally fluid-proof material around at least half of the inside of the mouth of the bag.

It is desirable for the adhesive layer to extend around slightly more than half of the inside of the mouth of the bag to create a secure seal when the adhesive is used.

Preferably the adhesive layer is protected by a peel-off strip.

Advantageously, the bag has a fold in the laminate to form one side edge of the bag and a seam extending along the other, for example a seam as set out in the first aspect of the present invention. The adhesive layer may



then extend between the fold and the seam, preferably slightly beyond both.

An example of a waste bag made in accordance with the present invention will now be described with reference to the accompanying drawings in which:

- Figure 1 shows a cross-section through a laminate from which the bag is made;
- Figure 2 shows an elevation of an intermediate stage in the manufacture of such a bag;
- 10 Figures 3a and 3b show elevations of respective opposite sides of the bag in a subsequent stage of the manufacture;
- Figure 4 shows an elevational view of the finished bag;
- 15 Figure 5 shows the interior of the mouth of the bag with the latter widened to reveal the various parts thereof;
- Figure 6 shows an elevational view of a modified form of such a bag;
- 20 Figure 7 shows a sectional view through the mouth of the bag shown in Figure 6 after a first fold; and
- Figure 8 shows, on a larger scale, a sectional view through the mouth of the bag shown in
- 25 Figure 6 after a second fold.

The waste bag 10 shown as a finished article in Figure 4 is made from a plastics laminate 12, as shown in Figure 1. It comprises a generally fluid-proof plastics

sheet 14 made of polyethylene laminated to a lining 16 of non-woven liquid-absorbent filamentary polypropylene material.

A generally 110cm square sheet of the laminate material shown in Figure 1 is folded on to itself along a fold 18 with the lining 16 at this stage on the outside and the polyethylene layer 14 on the inside. An ultrasonic welder is then used to weld the regions of polyethylene material 14 which are now in contact with one another along lines 20 and 22. The line 20 runs adjacent to the edges of the sheet which have been brought together as a result of the folding of the laminate on to itself, to create a seam 20 along an opposite side edge of the bag to that of the fold 18, all the way from the intended top of the bag to the bottom. The seam 22 extends along an intended bottom of the bag at an opposite end thereof to the intended mouth 24 of the bag, all the way across, so that the seams 20 and 22 cross one another and a complete seal at the intended lower end of the bag and all the way around the sides of the bag is created.

The intermediate stage of the bag shown in Figure 2 is then turned inside out so that the polyethylene layer 14 is now on the outside of the bag. A strip of the polyethylene layer 14 extending immediately below the intended mouth of the bag 24 is coated with a layer of adhesive 26 and, as shown in Figure 3b, this strip extends around the other side of the bag 10 beyond both side edges 18 and 20. This coating of adhesive material is covered by a protective

peel-off strip 28.

The bag is completed by folding the mouth end of the bag inwardly on to itself to the line 24 so that the adhesive cover 26 and the peel-off strip 28 are just on the inside of the mouth of the bag 10, as shown in Figure 4 and perhaps more clearly in Figure 5.

When the bag is used, waste material, such as discarded medical equipment which may still have body fluid in it, is dropped into the open bag, as shown in Figure 5, the peel-off strip 28 is removed, and thumb and finger pressure is exerted along the top of the bag at the mouth 24 thereof to press the adhesive layer 26 against the opposite side of the mouth of the bag. This forms a fluid-tight seal even if the bag is accidentally turned upside down. Indeed, the fact that the laminate has been turned in on itself at the mouth of the bag tends to result in fluid and equipment falling into one or other of the pockets created by the inwardly turned mouth, but in the event that any equipment or fluid does find its way between the in-turned sides of the mouth, the seal formed by the adhesive layer 26 is sufficient to prevent leakage, especially because it extends all the way and beyond the side edges of the bag 18 and 20 even before sealing occurs.

In the modified bag shown in Figure 6, the adhesive 26 and peel-off strip 28 (which may be provided by double-sided adhesive tape) is applied around the outside of the bag 10, at the mouth of the bag 10, which in this case is not turned in on itself. Rather, to seal the mouth of the

bag, the peel-off strip 28 is removed, and the mouth is folded down on itself by way of a first fold just below the mouth (or just above it after the fold has been completed) so that the adhesive on one side of the mouth adheres to the adjacent side of the bag as shown in Figure 7, and then a second fold is made between the mouth and the first fold, to fold the bag on itself again, whereby the adhesive on the other side of the mouth adheres to the other side of the bag, as shown in Figure 8.

10 Numerous variations and modifications to the illustrated bag may readily occur to a reader of ordinary skill in the art without taking the bag outside the scope of the present invention in one or other of its aspects. For example, the manufacture of the bag may be from a tubular sheet of laminate, and an ultrasonic seal may be formed along the bottom thereof. Indeed, it would be possible to make a bag from a tubular sheet in which both ends may be sealed in the manner in which the mouth only of the bag 10 in the illustrated embodiment is sealed, 15 although such a construction of bag would then fall solely within the scope of the second aspect of the present invention and not the first. The bag may be made in various different sizes.

**Claims:**

1. A waste bag made from a sheet of plastics laminate comprising a layer of generally fluid-proof plastics material and a layer of liquid-absorbent plastics material,  
5 in which the liquid-absorbent material is on the inside of the bag, and the laminate is turned back on itself along at least one seam of the bag, and regions of the generally fluid-proof plastics material that are in contact with one another along that seam are sealed together ultrasonically.
- 10 2. A method of making a bag, comprising the steps of:
  - (a) folding a sheet of plastics laminate comprising a layer of generally fluid-proof plastics material and a layer of liquid-absorbent plastics material back on itself so that the liquid-absorbent plastics material is on the  
15 outside;
  - (b) ultrasonically welding the generally fluid-proof plastics material from the two sides of the sheet thus brought together along at least one seam thereof; and
  - (c) turning the bag thus created inside out to bring  
20 the generally fluid-proof plastics material on to the outside with the liquid-absorbent plastics material on the inside.
3. A method of making a bag comprising the steps of:
  - (a) ultrasonically sealing a tubular sheet of a  
25 plastics laminate comprising a layer of a generally fluid-proof plastics material and a layer of liquid-absorbent plastics material, with the latter on the outside, to

create a seam along one end thereof by sealing together regions of the generally fluid-proof plastics material that are in contact with one another along that seam; and

(b) turning the bag thus created inside out to bring  
5 the generally fluid-proof plastics material on to the outside with the liquid-absorbent plastics material on the inside.

4. A waste bag having an adhesive layer which extends around at least half of the inside of the mouth of the bag,  
10 to enable the mouth to be sealed readily after waste matter has been inserted in the bag.

5. A waste bag having an adhesive layer which extends around the outside of the bag, at the mouth of the bag, to enable the mouth to be adequately sealed readily after  
15 waste matter has been inserted in the bag.

6. A waste bag according to claim 4 or claim 5, being made from a sheet of plastics laminate comprising a layer of generally fluid-proof plastics material and a layer of liquid-absorbent plastics material, in which the liquid-  
20 absorbent plastics material is on the inside of the bag and the laminate is turned back on itself along at least one seam of the bag, and regions of the generally fluid-proof plastics material that are in contact with one another along that seam are sealed together ultrasonically.

25 7. A waste bag according to any one of claims 4 to 6, in which the adhesive layer is protected by a peel-off strip.

8. A waste bag according to claim 1 or any one of claims 4 to 7, in which the bag has a fold in the laminate to form

one side edge of the bag and a seam extending along the other.

9. A waste bag substantially as described herein with reference to and as illustrated in Figures 1 to 5 or 5 Figures 1 and 6 to 8 of the accompanying drawings.



Application No: GB 9617139.2  
Claims searched: 1-3, 8

Examiner: Michael Richardson  
Date of search: 17 October 1996

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): B5D (DSB5, DSB6, DSS5); B8K (KWC)

Int Cl (Ed.6): A47G 29/06; B31B 1/00, 19/00, 19/64, 39/00, 39/64; B65D 30/02, 30/08, 65/38, 65/40; 88/16; B65F 1/00, 1/06, 1/14

Other: Online: WPI

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
A	EP 0317047 A2 (GUARDLINE) See column 1 lines 50-52	1-3
A	US 5178469 (COLLINSON) See column 9 line 61-column 10 line 5	
A	US 4119267 (KYDONIEUS) See column 3 lines 37-44	1-3

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